

METHOD FOR ETCHING A SEMICONDUCTOR SUBSTRATE USING GERMANIUM HARD MASK

Abstract of the Disclosure

5 An etching process using germanium hard mask (25) includes forming a dielectric layer (15) over a major surface (11) of a semiconductor substrate (10) and depositing a metallic germanium layer (22) over the dielectric layer (15). The metallic germanium layer (22) is patterned through a photo resist (24) to form the germanium hard mask (25). The dielectric layer (15) is selectively etched through the germanium hard mask (25) to form a dielectric hard mask (35), through which the semiconductor substrate (10) is subsequently etched. After forming the dielectric hard mask (35), the germanium hard mask (25) is stripped away by oxidizing the metallic germanium hard mask (25) to transform it into a layer (27) of germanium oxide and rinsing the semiconductor substrate (10) in water to remove the germanium oxide layer (27). Preferably, the germanium hard mask (25) is removed before etching the semiconductor substrate (10).

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